

W. C. Englehard 181

INAUGURAL DISSERTATION

ON THE

PATHOLOGY OF DROPSY,

SUBMITTED TO THE

**Medical Faculty of the University
of Edinburgh,**

IN CONFORMITY WITH THE RULES FOR GRADUATION,

BY AUTHORITY OF THE

VERY REVEREND PRINCIPAL BAIRD,

AND WITH THE SANCTION OF THE

SENATUS ACADEMICUS.

BY

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CANDIDATE

FOR THE

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Dr W. C. Baylone
with the Author's Compt. -

TO

M Y F A T H E R,

MY BEST FRIEND,

AS A

TRIBUTE OF AFFECTION AND GRATITUDE.

TO

Dr JOHN THOMSON,

PRESIDENT OF THE COLLEGE OF PHYSICIANS,
PROFESSOR OF GENERAL PATHOLOGY IN THE UNIVERSITY
OF EDINBURGH,

WHOSE WRITINGS ARE READ IN NEARLY

EVERY EUROPEAN LANGUAGE,

I DEDICATE THIS

INAUGURAL ESSAY.

INAUGURAL DISSERTATION

ON THE

PATHOLOGY OF DROPSY.

UNDER the general title of Dropsy, we include, effusions of serum into any or all of the serous cavities, or cellular tissues of the human body. In the following essay, it is not proposed to treat in detail of individual effusions, to enumerate symptoms, or to describe plans of treatment. Even of the etiology, and morbid anatomy, considered separately, we do not profess to give more than a cursory view. For, on account of the variety of its complications, the scope of our subject is so extensive, that the labour and experience of years would scarcely render us adequate to treat fully of every object of research that it presents. In fact, no department of the science of medicine better serves to prove that acuteness of observation, extensive and consummate knowledge, unwearied and enthusiastic industry,—must be possessed by him

who would merit the title of a learned and practical physician.

The sketch which we now attempt to present is divided into four sections ; treating of the Literary History, the Remote Causes, the Proximate Causes, and the Morbid Anatomy of Dropsy. The last three sections, however, treat of pathological conditions and morbid agents, which in different cases are in a great measure convertible into each other ; and this fact constitutes an excuse for an intermingling of subjects which may occasionally be detected in these divisions. In the last section, comprehending the Morbid Anatomy of Dropsy, are noticed the recent observations on albuminous urine ; which, though not strictly included by the title we have chosen, appear too important to be dismissed altogether without remark. Future researches, excited and guided by these discoveries, will doubtless throw fresh and valuable light on the pathology of the function of exhalation. And, as Dr Christison has already, in some of the cases referred to, remarked certain important alterations in the constituents of the blood, we may hope that the day is not distant when our expectations on this point shall be fulfilled.

SECTION I.—OF THE LITERARY HISTORY OF DROPSY.

The Literary History of Dropsy in some respects

resembles that of every disease whose existence has been recognized from a remote period. Though the most absurd ideas of its nature were entertained during the days of anatomical ignorance, yet at a period comparatively early, theories were proposed on this subject, which would unquestionably have anticipated discoveries that stamp some of our living physicians with honour, had they been followed up with the assistance of modern science, and remained uninjured by too hasty and extensive a generalization.

Hippocrates explained the occurrence of dropsy, by supposing that the solids of the body were corrupted, and transformed into water. Celsus attributed the effusion to a superabundance of the humours. Galen's theory of its dependence on refrigeration of the liver was that principally received, until Asellius discovered the existence of the absorbent vessels. Subsequently, obstructions of the liver and spleen, rupture or engorgement of the lymphatics and veins,—each in its turn was supposed to afford satisfactory explanations of the phenomena. Van Helmont and Morgagni even observed, in isolated cases, the connection between some dropsies and renal disease. Single cases of this description have also been related by Dr Wells and Dr Blackall ; though these physicians appeared unconscious of the practical value of their observations.

At the beginning of the present century, it was the prevailing notion that dropsy is a disease of

debility: Haller had pointed out that this is sometimes the case. Investigations on the causes and treatment of acute hydrocephalus opened the general question; and Drs Blackall and Abercrombie, among others, proved that effusions of an inflammatory origin also continually occur in other situations and circumstances. Still more recent researches have essentially added to our knowledge of the pathology of dropsy; and although valuable points of diagnosis are still partially wrapped in obscurity, yet we now possess grounds of practice in this disease, which are probably as sure as any that the art of medicine can boast.

SECTION II.—OF THE REMOTE CAUSES OF DROPSY.

While pre-existing lesions, to be afterwards enumerated, must evidently be considered as the chief or proximate causes of dropsy, there are others more remote in their operation, which it is also necessary to notice.

It is well established that these affections are very unfrequent in warm and dry climates. Hence we understand, that a cold and moist, or a warm and moist atmosphere, especially if contaminated with impure air, are *predisponents*. Relaxed and plethoric habits, those of lymphatic or phlegmatic temperaments, the scrofulous, the syphilitic, and the aged, are all peculiarly liable to the attacks of this disease.

These affections may be *excited* by physical agents ; as cold, wet, miasmata, mental distress, and unwholesome food. A remarkable instance of the influence of the exciting cause last mentioned was observed in France during the famine of 1816. Dropsies may supervene on antecedent diseases, chiefly fevers, and visceral inflammations and obstructions ; being in this case more properly denominated symptomatic, secondary, or consecutive effusions.

Among these, also, rank the repulsion of the acute exanthemata and of erysipelas ; the retrocession of porrigo, scabies, herpes, and lepra ; the repulsion of gout and rheumatism ; and the sudden suppression of the cutaneous, mucous, intestinal, hemorrhoidal, menstrual, or lochial discharges. Again, effusions may, on the contrary, succeed excessive depletions or exhausting hemorrhages.

SECTION III.—OF THE PROXIMATE CAUSES OF DROPSY.

There can be little doubt that the morbid conditions or pathological states which are accompanied by dropsy, acting in concurrence or succession, may frequently or always be considered as the *causes* of the effusion. This section, then, treats rather of the *manner* in which such pathological conditions may be supposed to operate : thus reducing these morbid appearances into classes, ac-

according to the mode in which dropsy had become one of their symptoms. Many of these diseased states, however, not being necessarily followed by dropsy, are often to be viewed rather as permanently predisponent, than as proximate causes of that affection.

In order that a morbid effusion may occur, one or both of two functions, namely, absorption and exhalation, must be perverted. It is less easy to decide in which of these lies the fault. Experiments show, that pressure upon the veins or lymphatics produces an effusion of serum into the structures, the return of whose excrementitious particles is thus impeded. Magendie has also proved, that absorption proceeds more slowly in a state of plethora than in health ; at all events, when such plethora has been artificially induced.

In dropsical cases, however, the rapid progress of emaciation exhibits absorption in full activity ; and lymphatic trunks have been tied without producing the effect of effusion. Moreover, we continually observe, that every species of exhalation is subject to great variety in composition. Nor are the effused fluids of dropsy identical with the healthy secretions of the parts in which they appear,—containing a larger proportion of serum ; this difference at once forbids us to ascribe the result exclusively to diminution of absorption.

It is obvious, however, that in every case of such effusion, the *equilibrium* between exhalation and absorption is disturbed ; since a larger quan-

tity of fluid is poured out by the exhalent vessels or pores, than is carried away by the circulation. There exists also, in all probability, some morbid modification of the action of the exhalents, whereby these vessels deposit matters differing from those which are the result of a healthy performance of their function.

An important practical question follows:—In what state of the system do dropsies occur? and this inquiry will be found to admit of a less ambiguous reply. The experiments of Magendie show that a state of plethora is unfavourable to the functions of the absorbent system; and the phenomena of disease, with the effects of remedies, daily demonstrate how favourable fulness of habit is to increased exhalation; by which means, in fact, the balance of health is frequently preserved for a length of time, notwithstanding continual habits of excess.

The humoral pathology met with the natural fate of arbitrary power, and was completely overthrown. Its successor, however—solidism—has also given way; and the present state of opinion does not forbid us to attribute some forms of dropsy to the condition of the blood. Our limited knowledge of this subject does not at present admit of very definitive statements; yet it is certain that dropsies follow profuse hemorrhages, and that the latter have increased the proportion of serum in the blood. This has been supposed to be caused by the return into the larger vessels of

much of the thinner part of the blood, previously diverging into the smallest capillaries. It is also ascertained, that in various cases of effusion, especially in those where we find extreme debility, the blood often presents decided deviations from that of health in its chemical and physical properties. The blood, if drawn, is found to coagulate less quickly than in health. The coagulation, when it does take place, is imperfect; the clot being loose, large, and flocculent.

There is, therefore, no doubt that the balance of exhalation and absorption may be disturbed either in vascular plethora, or in general debility of constitution, or in a diathesis simply inflammatory. And here we at once perceive a complete analogy in this respect between dropsies, hemorrhages, and the profluvia. When these facts are established, we have already made great advances towards a just pathology and principle of treatment in all these classes of disease.

Effusions may be idiopathic or symptomatic. The former are generally acute, the latter more usually chronic. To this general remark, however, we shall find many exceptions: more especially when considering the numerous cases of general dropsy depending on debility. These, though probably idiopathic affections, are slow and insidious in their commencement, and long in their duration. In acute dropsies we shall generally, if not always, find that some part is in a state of inflammation or excitement: giving rise perhaps to local, but

more frequently to general effusion. We cannot always, however, draw a precise line of demarcation between the idiopathic and symptomatic forms; for, should the exciting cause have been constituted by the cessation or derangement of certain functions, the importance of the cause may almost elevate the latter into the rank of primary disease.

Exhalation may be primarily increased from very various causes. Effusion, it is evident, may arise from a congestion in, or an increased determination of blood to a part, stimulating the vessels to renewed activity of secretion, in the same manner as we know that the stomach during digestion possesses increased vascularity, and is excited to the production of the gastric fluid. This is also the case during menstruation with regard to the uterus, as well as when, in consequence of conception, the same organ forms the *membrana decidua*.

Inflammation, also, is continually observed to terminate in effusion, or to be followed by it. This, in fact, is the most efficient cause in producing one of the four definitive characters of the inflammatory state,—swelling. A blow on the testicle will cause irritation which may be followed by hydrocele. And in the operation for the radical cure of this affection, the injection of a stimulating fluid into the *tunica vaginalis testis* at first occasions a renewal of the effusion. The termination which we anxiously endeavour to avert in cases of phrenitis is effusion into the arachnoid membrane; and

it may be incidentally remarked, that the brain is the situation in which this effect most frequently follows inflammation. Next to the head in point of liability come the pleura and pericardium. Nor is effusion into the peritoneum an unusual result of inflammation of that membrane, especially when the affection has been of a chronic character. When tubercles of the peritoneum are attended with an ascites, this is probably caused by the occasional subacute inflammations which the former excite. Again, in the treatment of certain dropsies, we find it impossible to obtain the physiological effects of diuretic remedies, unless their administration be prefaced by a general blood-letting; after which, even in smaller doses, the same medicines will immediately operate in the most satisfactory manner. This fact, well known in therapeutics, appears clearly to indicate a direct relation between the dropsical symptoms and the inflammatory state.

A vascular or serous plethora, giving rise to dropsy, is not unfrequently caused by the obstruction of some emunctory; of the cutaneous, pulmonary, intestinal, or urinary secretions, or of habitual morbid discharges. This remark is well illustrated by the therapeutic action of diuretic and of hydragogue remedies in the cure of dropsy. These medicines, acting in the one case on the general circulation or on the kidney, and in the other on the exhalents of the alimentary mucous membrane, frequently afford a most speedy relief. This can

happen only because, by relieving the vascular system from the load which oppressed it, such drugs enable it once more to remove by absorption the fluid that it has deposited.

Debility of the system presents various pathological states of a different order, but which may equally be accompanied by dropsies. There may be deficiency of tone in the exhaling vessels or pores, imperfect cohesion of the tissues, or both may act in unison ; and hence we shall find effusion. This effect might be increased were the constitutional debility caused by hemorrhages ; in which case, the blood being more serous and less cohesive than usual, might possibly be already predisposed to separate and extravasate its aqueous ingredients. Nor is it impossible that dropsy may frequently arise from deficient action of the absorbent vessels, whether veins or lymphatics. This cause, when depending on deficient power of the vessels concerned, appertains to the state of debility ; and the therapeutic effects of stimulants, tonics, and diuretics, in such cases, render its influence hardly doubtful. When the want of action, however, arises, not from diminished power, but from mechanical impediment, it is by no means necessarily connected with a state of constitutional weakness.

Lower, by tying the inferior *vena cava* and the jugular veins, proved to demonstration that dropsy may arise from obstruction of those vessels ; and this result is no more than the later discoveries

of Magendie would have led us to expect. Tumours in the abdomen or pelvis, accompanied by anasarca of the lower extremities, appear to act in the same manner. *Phlegmasia dolens* may probably be adduced as another example of effusion from obstructed absorption; for it is now agreed that either the veins or the lymphatics of the affected extremity, or both, are the primary seat of the evil. Œdema has been seen in an extremity, apparently arising from the inflammation of its veins. An example of this occurred in the Royal Infirmary of Edinburgh last summer, under the care of Professor Syme, where the *origo mali* was injury of a vein from blood-letting. Although in these last two diseases the characters of the effusion differ in some respects from those of common anasarca, yet they seem equally tending to establish the proposition. The common phenomenon of swelling and varix from tight *gartering*, affords a familiar example of the influence of an impediment to the return of venous blood to the heart. In several diseases on which secondary dropsy is an attendant, there exists some obstruction to the free passage of the blood. Diseases of the heart, chronic bronchitis, mal-function, or mal-organization of the liver, spleen, or kidney, illustrate this remark.

All these causes of idiopathic or consecutive dropsy may be variously united, and of course one or more may act in combination, thus frequently obscuring their diagnosis, and perplexing the physician in their treatment. Although some may ap-

pear to consist in little but hypothesis, and at present to answer but little practical purpose, yet hypotheses serve to elicit facts, and to excite to observations, on which certainty may hereafter arise.

The proximate causes of dropsy consist, then, in impediments to the return of the blood to the heart, in inflammatory action, in debility, or in suppression of the natural urinary excretion.

The fatal event in dropsy, when the latter is the immediate cause of death, is generally brought on by coma or by asphyxia.

SECTION IV.—OF THE MORBID ANATOMY OF DROPSY.

Our next object is to present a sketch of the connection which exists between dropsies and the various diseases to which they may be merely secondary; and where the effusion, though so important an accompaniment and effect, is often of less moment, and to be less attended to, than the primary affection from which it springs. This inquiry leads us into what may perhaps be called the Morbid Anatomy of Dropsy, and will bring under our notice a very considerable portion of the structural alterations which take place in the thoracic and abdominal viscera. Nor will the extent of its complications surprise us, when we remember that dropsy consists in the perversion of functions common to every organic molecule of the body.

We may arrange the morbid alterations of structure which are now to pass under review, in three classes, founding this classification upon the mode in which they act as proximate causes of dropsical effusion. We shall speak of them as indicative of inflammatory action—as causing obstruction to the return of blood to the heart—and as occasioning suppression of the natural urinary excretion.

The *first* class consists of alterations indicative of inflammatory action in the seat of effusion. Of this kind are the morbid appearances of phrenitis, and of the *hydrocephalus acutus* of children. That the effusion in phrenitis is caused by inflammatory action is proved by the softening of the cerebral substance, which is so often observed to accompany the presence of fluid in such cases. Most diseases of the heart and lungs produce the same effect in a different manner ; but the fluid which is deposited in pericarditis and pleuritis falls under the same head of inflammatory affections. By far the greater number of cases of abdominal dropsy are accompanied by one or more of the structural alterations to be enumerated as constituting our second class : but ascites is frequently an inflammatory affection, and caused by simple peritonitis ; and it would appear that, when dropsy is connected with tubercular deposition in the peritoneum, the effusion is the result of occasional attacks of inflammation.

The *second* class of morbid appearances with which we are concerned, comprehends those which have acted by offering impediments to the return

of blood to the heart. These are very numerous : and constitute the greater number of diseased states which still remain to be mentioned. Affections of the heart and lungs, by their injurious influence on the pulmonary circulation—nearly all chronic abdominal diseases, by their effect on the return of blood by the *vena porta*—are of this description.

The closing scenes of fevers and of numerous chronic diseases display effusion into the cranial cavity as a prominent phenomenon. And we know that an affection of this description is often the proximate cause of the fatal coma of *ischuria renalis* ; forming likewise an alarming complication with the general dropsy attending morbid alterations of the kidneys.

Auscultation, in its most refined researches, combined with careful dissections, has proved how very diversified are the affections of the heart. Every form, from excessive hypertrophy and dilatation, to a comparatively slight alteration in a valve, is extremely liable to give rise to dropsy. In these cases, the dropsy is often excited by the chronic bronchitis that follows cardiac lesions. The effusion constitutes a symptom which, sometimes easily admitting of a temporary alleviation, recurs yet again and again ; and is no slight addition to the distress caused by the primary disease. Here, effusion takes place into the peritoneum slowly or not at all : appearing chiefly under the forms of general anasarca, hydropericardium, and hydrotho-

rax. Eventually, however, every cavity, from the cellular areolæ to those of the brain and abdomen, participates in the general wreck.

Diseases of the arterial system, especially aneurism of the aorta, are frequently found in dropsy ; having afforded impediments to healthy circulation. These affections consist of inflammation and ulceration of the lining membrane of the vessels ; or of scrofulous, atheromatous, and ossific deposits, giving rise to aneurisms of a greater or less extent. Indeed, it is observed by Dr Darwall, in the *Cyclopedia of Practical Medicine*, that he has seldom examined a patient dying of general dropsy, whose body did not exhibit some alterations of this kind. Nor is the venous system exempt from a share in producing so general a symptom. Fibrinous obstructions, inflammation, and purulent secretion, have often been observed in the neighbourhood of parts attacked with local anasarca.

The observations of Dr Hodgkin have shown that effusion may depend upon, or be at least accompanied by, an alteration of the lymphatic vessels and glands. He found this to occur especially in the neighbourhood of great blood-vessels. The change appeared to him to consist in hypertrophy rather than transformation of the glands, which he found indurated and enlarged uniformly throughout their texture, in all the cases which he inspected. And in cases of ascites, it is common to find the mesenteric glands altered in various

ways, either as already mentioned, or in a state of tubercular softening.

Diseases of the lungs are continually found in the various forms of dropsy, and the manner in which these have acted requires no explanation. The seat of the effusion varies with the disease, and it may be more or less general in each particular case. Though it frequently commences in the thoracic cavity, and proceeds also to occupy other situations, yet this is by no means constant, and it is perhaps from experience alone, and not from any *a priori* reasoning, that a prognosis can be given upon this point. The cellular tissue which forms a constituent of the pulmonary organs themselves is equally liable to be involved. We meet with effusions in peripneumonia, chronic bronchitis, pleurisy, and tubercular phthisis; discovering, of course, upon dissection, the varied phenomena presented by these diseases. Of this kind is the *œdema pulmonum*, effusion into the air cells, which sometimes proves fatal by asphyxia. In each, as in cardiac lesions, cerebral effusion will frequently have been the immediate cause of the fatal termination.

When the abdomen has been the seat of the primary affection, we shall find alterations of the peritoneum, liver, spleen, pancreas, kidneys, uterus, or ovaria.

That species of dropsy which derives its origin from hepatic disease was early recognized, and even now is by some placed in a rank more prominent

than it deserves, Nevertheless it is our duty, especially in cases of ascites, never to neglect the examination of this viscus before forming a diagnosis. We cannot, however, during life, determine the precise nature of the organic disease. After death, the liver is found to exhibit very numerous changes. It may be enlarged, or of normal dimensions. It is frequently hard and scirrhus, often tuberculated. A scirrhus transformation has been more particularly described by Dr Bright, who judiciously observes, that those alterations which appear to act by compressing the ramifications of the *vena porta* seem to be those most frequently attended with dropsy. A remarkable modification of this organ is that which is termed the "nutmeg liver." Dr Bostock has rendered it probable that its appearance is occasioned by an infiltration of the substance of the liver with inspissated bile, as the presence of cholesterine was inferred from his analysis ; and this idea is suggested by the mere inspection of the morbid deposition. On the other hand, Mr Kiernan has lately attempted to prove, that the nutmeg or variegated liver is entirely a pseudo-morbid appearance, depending on the quantity of blood which is allowed to circulate in the *vena porta*.

The spleen and pancreas do not present symptoms by which their diseases may admit of a correct diagnosis during life ; indeed it is by no means certain that those of the latter bear any part in producing the general effect. But when we con-

sider the large quantity of blood which passes through the spleen in branches of the *vena porta*, we are easily persuaded that affections of this organ may exercise a powerful influence in exciting dropsy. And, accordingly, it is sometimes found enlarged, indurated, and tubercular in dropsical patients. Our knowledge, however, of the pathology of the spleen, is not much more extensive than that which we possess of its physiology.

Diseases of the uterus and ovaries are among the varied morbid conditions which become causes of dropsy. Those of the uterus need hardly be enumerated, as few exist long without giving rise to anasarca of the lower extremities. In fact, so constant an accompaniment is dropsy of most organic diseases, that the attempt to describe particularly the lesions presented on dissection, would be like that of describing morbid anatomy in general, and would swell this little essay into a ponderous volume.

Ovarian disease is generally attended with the *encysted* dropsy, and this constitutes as it were a new formation, not to be embraced by the general explanation or theory of effusions. Sometimes, however, the ovarian disease appears to excite ascites, when consisting in a state of enlargement and alteration, which is not as yet accompanied by cysts containing a fluid. The two affections, general and encysted dropsy, are subsequently often conjoined.

In the *third* class of structural alterations which

we intended to mention, are placed those which occasion modification or suppression of the urinary excretion. And recent researches enable us to place lesions of the kidneys in a much more prominent rank than formerly. As this department of our subject is in some measure novel, and perhaps more peculiar to dropsy than most of the lesions at which we have so cursorily glanced, we may be allowed to bestow somewhat more attention to the precise nature of the anatomical appearances presented in morbid states of the kidney. The authority to be followed in this description is principally Dr Bright, whose Hospital Reports have gained so much deserved honour for their author.

Van Helmont and Morgagni, as well as Dr Wells and Dr Blackall, have recorded isolated cases in which renal disease was discovered after death in dropsical patients ; and the illustrious Andral, still more recently, met with a similar instance, which he has recorded in his Pathological Anatomy ; but it was reserved for Dr Bright to point out the frequent connection existing between dropsy and diseased kidneys, and to throw new light upon the diagnosis of such an association. Drs Christison and Gregory in Edinburgh followed up his observations ; and the former not only confirmed but extended his views. It is now sufficiently well established that disease of the kidney is very frequently the origin of dropsy. Dr Christison considers it probable, that, at an early period of the

renal affection, it is of a low inflammatory nature. From the albuminous state of the urine when consecutive effusion follows scarlatina, it may be considered probable that the kidneys are affected in such cases, although there undoubtedly exists most frequently an inflammatory condition of the thoracic viscera. The symptom alluded to will be more particularly noticed below. Dr Bright has established three principal morbid alterations of the kidney.

The first degeneration of the organ in question is that in which there is no obvious morbid deposit. There is a yellow, mottled appearance on the external surface, which is also observed on making a section of the cortical substance, leaving the tubular portion of a colour lighter than natural. This alteration is frequently found in patients who have suffered from tedious or exhausting disease. When the affection has arrived at a more advanced stage, the structural alteration appears to have become more decided; consolidation seems to intercept portions of the circulation, and the external surface of the organ is somewhat tuberculated.

In the second form described by Dr Bright, the external surface at first presents merely an increase of the natural mottling, sometimes with specks, as if of fine sand, sprinkled in different situations; and the same is observed in a slighter degree on making a longitudinal section. Afterwards, the kidney becomes somewhat enlarged, its surface exhibits slight projections, the cortical structure is converted

into a granular texture, and an opaque, white interstitial deposit is copiously infiltrated throughout the organ.

In the third species, the kidney is rough and scabrous externally, with yellow, red, and purplish projections or lobulations. The texture is of a hardness approaching to that of cartilage, there is less interstitial deposition than in the second form, the tubular divisions are drawn nearer to the surface, and there appears to be a contraction of every part of the kidney.

Other alterations of the kidney, as obstruction of the tubes, softening, and steatomatous degeneration, also occur; and these also are observed to excite, or be attended by dropsy.

Although rather irrelevant, we may here slightly notice that symptom which Dr Bright has considered as pathognomonic of renal diseases. It is stated by him, and it has been confirmed by Dr Christison, that in these cases the urine affords an albuminous precipitate, presents a deficiency of urea, and has a low specific gravity. That this condition of their secretion is an absolutely pathognomonic sign of disease in the kidneys has been doubted by Drs Prout and Elliotson; and the late Dr Darwall, in the work already cited, mentions a case where albuminous urine was observed, and upon dissection disease of the heart was found to be present, but no morbid alteration of the kidneys could be discovered. Dr Bostock also states that he found an albuminous precipitate in the

urine of a healthy individual. Notwithstanding these objections, however, it cannot be questioned that the conclusions of Dr Bright, as well as those of Drs Christison and Gregory, have been drawn from a large induction of facts; and Dr Alison, of Edinburgh, believes that coagulability of the urine, with a low specific gravity, is hardly ever found when disease of the kidney does not exist. (Clinical Lectures, 1834). The least, probably, that can be said in favour of these latter views may be summed up in the words of Dr Christison: —“ It is a phenomenon which ought always to excite suspicion, and enforce the necessity of further inquiry.”

In the consideration of the morbid anatomy of dropsy, we have lastly to describe the state of the tissues actually concerned in the effusion, and the nature of the effused fluids.

The tissues concerned are the serous sacs and the cellular membrane. The serous membranes most commonly present thickening and opacity to a greater or less extent. The peritoneum has been found perfectly white, and nearly of the thickness of chamois leather. A case has been related in which, after paracentesis had been performed six hundred and sixty-five times, the peritoneum was cartilaginous, and three lines in thickness. (Dr Copland.) In the pleura, pericardium, and peritoneum, coagulable lymph is thrown out, and adventitious membranes are frequently thus produced. When themselves the principal origin of the drop-

sy, the serous membranes have been found tuberculated.

The cellular tissue, when the seat of dropsy, is more or less thickened, the areolæ are dilated, or several are thrown into one; and Portal has seen this tissue converted into a cartilaginous structure. In the disease of infants denominated *skin-bound*, the primary affection is thought by Dr Alison to be an erysipelatous inflammation of the cellular tissue.

The nature of the effused fluids constitutes the only topic remaining for consideration. It is to Dr Marcet that we are indebted for a more particular account of their composition. The prevailing animal substance appears to be albumen, which, however, exists in very various proportions. Gelatine was not discovered in these fluids by Dr Marcet's analysis. He found also a peculiar animal matter, which he named muco-extractive matter. The saline ingredients are the muriates and sulphates of soda and potash, and the phosphates of iron, lime, and magnesia. The proportions of the saline ingredients are nearly constant, but the animal matters are subject to continual variations, even in the same dropsy at different periods. The quantity of albumen is considerable in the fluids of hydropericardium, hydrothorax, ascites, and hydrocele, while it is barely perceptible in those of hydrocephalus and hydrorachitis. In some of these effused fluids, small scales have been observed, which Dr Christison found to consist of choleste-

rine ; this, however, Dr Bostock suggests, may be a conversion of the albumen, similar to that which takes place in the formation of adipocire.

Of course, the fluids of dropsies may be variously intermingled with lymph; pus, and other morbid productions, affecting their appearance and transparency.

It is worthy of notice, that limbs affected with anasarca present a morbid deficiency of the animal heat. The remarkable tendency of inflammation, when it attacks limbs thus affected, to pass into mortification, exhibits the weakened state of the constitution.

THE END.

